



LACOBEL T MATELAC T

PROCESSING GUIDE

VERSION 12 – MARCH 2019

Your Dreams, Our Challenge

This version of the guide replaces and cancels all previous versions.
Please regularly check www.agc-yourglass.com for any updates.

Preliminary Important Instructions

Thanks to carefully read the following instructions before processing Lacobel T and Matelac T glass.

AGC strongly recommends that each processor who wants to heat strengthen or toughen Lacobel T or Matelac T products should contact AGC's Technical Advisory Service (tas@eu.agc.com) and ask for assistance from one of its Coating Coaches in setting up the toughening furnace. This will make the processing procedure smooth and easy for the customer and will limit possible risks of claims in future. If the trial is successful, the processor will receive an AGC certificate showing that they are an AGC Certified Processor of Lacobel T and Matelac T and their contact details will be listed on AGC's product website www.agc-yourglass.com.

1. **Product** - Lacobel T and Matelac T must be either thermally toughened according to EN12150 or heat strengthened according to EN1863.
2. **Product** - Process Lacobel T and Matelac T within 24 months of delivery.
3. **Storage and Handling** - Store and handle Lacobel T and Matelac T with care to avoid damaging its paint or staining the etched side of Matelac T. Clean off any kind of potential pollution coming in contact with the painted side and quickly and carefully dry off water and/or humidity. Upon request, a protection foil can be applied to the paint side of the glass to protect it during transport, storage and processing. This foil must be removed before tempering.
4. **Cutting** - Cut Lacobel T and Matelac T on a clean cutting table, painted side down. Use compatible volatile cutting oil and wipe it off after cutting. Perform water jet cutting on the painted side.
5. **Edge processing - Single edger** - Painted side facing the operator, use clean pads. Crossed belts: painted side face-up, use sprinklers.
6. **Edge processing - Double edger** - Painted side face-up, use clean belts. CNC: painted side face-up or facing the operator.
7. **Washing** - To avoid damages to paint, **carefully dry the glass within 15 minutes after edge processing**. Do not stack wet glass sheets between edge-processing and washing.
8. **Heat treatment - Never use furnaces without convection**. Heat treat the glass within 5 days after edge processing and washing. Painted side face-up.
 - Furnace settings with top convection only: 690 °C top and 710 °C bottom.
 - Furnace settings with top and bottom convection: 690 °C top and 700 °C bottom.Convection: 35% of the maximum pressure top and bottom (if any), for the first 100 seconds of heating time.
9. **Enamel quality** - Test the quality of the enamel after heat treatment by touching the painted side with a wet finger: no wet stain may be visible from the glass side.
10. **Further information** - Please visit www.agc-yourglass.com - Lacobel T or Matelac T brand description - to download your language version of this Instruction Sheet or to contact AGC's Technical Advisory Services (TAS). Or visit www.youtube.com/user/yourglass to view the Lacobel T processing video.

CONTENTS

0. PRODUCT: LACOBEL T AND MATELAC T	5
I. RECEPTION AND STORAGE	5
• 1. Unloading.....	5
• 2. Storage of the packs	6
II. PROCESSING.....	6
• 0. Safety.....	6
• 1. General	6
• 2. Handling.....	6
• 3. Cutting	6
3.1 General precautions	6
3.2 Cutting through the paint protection foil (if applicable):.....	7
3.3 Storage after cutting	7
• 4. Pre-processing	8
4.1 Handling of the glass	8
4.2 Precautions.....	8
4.3 Edge processing	8
4.4 Drilling and cut-outs	8
• 5. Washing.....	8
• 6. Thermal toughening and heat strengthening	9
• 6.1 Introduction	9
6.2 General information on furnace type	9
6.3 Recommendations.....	10
6.4 Furnace settings for the heat treatment.	10
6.5 Unloading	12
6.6 Heat soak test.....	12
6.7 Standards	12
6.8 Packaging.....	12
• 7. Bending.....	13
7.1. Heat treated curved glass – oscillating furnaces	13
7.2. Heat treated curved glass – static furnaces (with bending moulds)	13
7.3. Annealed curved glass.....	13
• 8. Sandblasting	13
• 9. Laminating	13
• 10. Silkscreen printing.....	14
• 11. Façade applications	14
• 11.1 Single glazing.....	14
• 11.2 Insulating glazing	14
• 11.3 Structural glazing, primary and secondary sealing	15
• 11.4 Quality control	16
• 13.1 Processing in the same factory	16
• 13.2 Sending cut sizes to another factory.....	16
• 13.3 On site.....	16
III. CONFORMITY	17
• 1. CE Marking	17
• 2. Disclaimer	17
IV. GLAZING INSTRUCTIONS.....	17
V. TOUCH-UP PAINT.....	17
VI. CLEANING.....	17
VII. NOTES.....	17
VIII. DISCLAIMER	18

0. PRODUCT: LACOBEL T AND MATELAC T

Lacobel T and Matelac T are products intended for interior and exterior applications.

They are to be used in glass side reflection, never in transmission applications. Hence, Lacobel T and Matelac T are not suitable for applications where the glass is back-lit (neither naturally, nor artificially). Please contact your local AGC agent for an alternative product for such applications.

Lacobel T and Matelac T **MUST BE** heat treated (either heat strengthened according to EN1863 or thermally toughened according to EN12150, see recommendations in § 6) before any further processing or applications.

This document gives recommendations on how to maximise the quality of the product.

The content of this guide reflects our knowledge and experience at the time of publication.

Customers and glass fitters can always contact AGC's Technical Advisory Services (TAS) for further assistance if required. The glass fitter is entirely responsible for the final application, including the installation of the glass and the compatibility between the different materials used.

AGC Glass Europe accepts liability for the product it supplies and for its general sales conditions.

I. RECEPTION AND STORAGE

Lacobel T is available in DLF or PLF sizes, Matelac T is available in DLF sizes.

1. Unloading

Upon delivery, glass can be stacked in the following ways:

- DLF: glass or paint facing the rack - to be specified when ordering the glass
- PLF: default with the paint not facing the rack (to be specified when ordering the glass)

Paper or powder interlayer can be used to separate the glass.

During the operations of unloading and internal transport, everything coming in contact with the paint side, has to be clean. If necessary, a protective material has to be used between the paint and the handling equipment. For the Matelac T, special attention should also be given to the acid-etched face of the product as it is very stain sensitive.

The packs of glass must be inspected upon arrival. AGC shall accept no liability for faults arising after delivery or during handling, processing or installation of the finished product in the building if this procedure is not followed:

- The rack must be positioned on a perfectly level ground
- Use the appropriate handling equipment
- The handling equipment must be perfectly centred
- Avoid damaging the paint and the protective packaging whilst handling
- The glass must be stored on appropriate racks
- All recommendations given in this Processing Guide shall be strictly followed.

General comments:

- Clamps, slings, lifting beams and other handling equipment must comply with prevailing regulations and be approved by the relevant authorities.
- Ensure the safety of personnel at all times. Keep all unnecessary personnel out of the handling area. Wear appropriate personal protective equipment.
- Personnel must have received the necessary training.

2. Storage of the packs

Storing packs correctly reduces the risk of chemical or mechanical damage to the glass.

As a general rule, care should be taken to avoid major fluctuations in temperature and humidity that may cause condensation on the glass because this may impact the quality of the paint. Such fluctuations generally occur near loading and unloading areas. No water should come into contact with the sheets of glass. To prevent any risks, upon request, a protection foil can be applied by AGC on the paint side of the glass. This foil protects the paint while the product is being transported, stocked and processed. The foil must be removed before tempering.

Transport stillages are designed for short transports and not for storage. Consequently, the glass must be stored on racks with clean spacers between packs ensuring that all packs of the same size are stored together.

When opening packs, make sure the painted surface of the final sheet is not exposed to pollution and humidity for a prolonged period.

The glass should preferably be used within 24 months of delivery.

II. PROCESSING

0. Safety

At each stage of the processing procedure, the personnel responsible for handling the glass must have the adequate equipment: safety shoes, clean safety gloves¹ (**preferably new gloves**), safety glasses, etc.

1. General

Personnel must wear perfectly clean safety gloves at all stages of the processing procedure to avoid any pollution on the glass and/or the enamel paint.

2. Handling

The sheets of glass should be handled using suction lifting gear or an automatic stacking machine. The suction pads should ideally be attached to the glass side. For Matelac T, as the glass side is acid-etched and thus sensitive to pollution, the suction pads must be perfectly clean and covered with protective suction pad covers.

If the suction lifting gear is attached to the painted side during handling, the suction pads must be perfectly clean and covered with protective suction pad covers. Care should be taken to ensure the suction pads do not slip on the paint at this stage.

If self-adhesive stickers are used during the process to identify the glass during production, the adhesive side of the sticker shall never be in contact with the paint side.

3. Cutting

3.1 General precautions



The following general precautions must be taken during cutting:

- The cutting oil used must be compatible with the painted surface, sufficiently volatile and water soluble (e.g. Sogever 1100 FG or Acecut 5503). As little oil as possible should be used in order to avoid heavy oil contamination of the painted surface.
- The cutting oil should be wiped off the glass side before unloading the cutting table.

- The glass must be placed with the painted side down to ensure a correct cutting procedure (the glass cannot be cut from the painted side). The table must be clean and free of glass shards or any other abrasive substances. If the table has rollers, they must be pre-checked. Rollers must be perfectly synchronised to avoid scuffing the painted surface.
- Regularly cleaning the conveyor belts may be necessary to prevent pollution marks. Any such mark would damage the paint side (but would not be visible on the glass side).
- The table and any other equipment likely to come into contact with the paint must be pre-checked. If stains are not removed by the washing machine, checks must be carried out to ensure they fully disappear at the heat treatment (stains embedded deep in the paint will not disappear).
- Lacobel T and Matelac T can be cut with a waterjet installation, using the same settings as for normal float glass with the same thickness. The **waterjet** shall be positioned on the **paint side**. If the tool is not sufficiently clean it could affect the final appearance of the painted surface. **The glass should be thoroughly rinsed after water jet cutting and washed and dried within 15 minutes after edge processing**

3.2 Cutting through the paint protection foil (if applicable):

- If requested, a protection foil is added to the paint side of the Lacobel T or Matelac T, to protect it from high humidity or too long water exposure (above 15 minutes) while being transported, stored or processed. AGC advises using the cutting wheels mentioned in the table below to successfully cut the glass with the protection foil through the foil side.
 - Please consult the following website to find the nearest office to you:
<http://www.bohle-group.com/shop/>.
- Correct cutting settings can differ from one cutting installation to another and can be tested by cutting test strips 100mm wide and at least 1m long. It should be possible to break the cut strips by hand.
- The below-mentioned cutting wheels can also be used to cut non-painted glass without a protection foil.
- AGC provides this information for advisory purposes. The user/customer is solely responsible for using this advice.

Cutting wheel	Angle (°)	Thickness (mm)	
B0 03A100M	100	3-4	
B0 03A110M	110	4-5	
B0 03A115M	115	5-6	
Cutting wheel including plastic holder			
B0 416A100M	100	3-4	
B0 416A110M	110	4-5	
B0 416A115M	115	5-6	

3.3 Storage after cutting

Cork discs with (self-adhesive) foam³ can be placed around the edges of the glass. The adhesive side should be attached to the glass side. The same also applies to packs containing differently sized sheets of glass.

The Lacobel T and Matelac T paint must not be edge-deleted along the perimeter of the glass.

We advise:

- ✓ **heat treating the glass within maximum five days after the edge processing and on-line washing.**

4. Pre-processing

Lacobel T and Matelac T are designed to undergo a heat treatment (either heat strengthening or thermally toughening) (see instructions §6). Before either takes place, the glass must be edge-processed.

4.1 Handling of the glass

Personnel responsible for handling and shaping the edges of the glass must wear **clean safety gloves**.

4.2 Precautions

The glass must be kept moist for the entire edging process to prevent it from drying naturally.

The glass must be washed and **dried within 15 minutes after edge processing**.

The glass sheets shall never be stacked wet on a stillage, between edge-processing and washing.

4.3 Edge processing

There are various types of edge processing machines on the market:

- **Vertical single-edging** systems can be used, but may cause significant and irreversible contamination on the painted side of the glazing, as the glass is held in place by rubber caterpillar pads. To limit contamination, the pads facing the paint should be kept spotlessly clean (no oil, grease or dust). We recommend using pressure pads with a grey color⁶, the rubber of these pads does NOT contain “carbon black” fillers that could cause irreversible contamination of the painted side. The **painted surface is facing the operator**.
- **Crossed belt** systems can be used provided the **painted surface** is facing **upwards**. Use water sprinklers during the edging.
- **Horizontal double-edging** systems can be used provided the glass is supported by clean conveyor belts. Again, the **painted surface** should face **upwards**. Some of the water sprinklers should be set so that they clear the painted surface of any impurities (stains, glass dust, etc.) just before the glass comes into contact with the upper conveyor belts.
- **Numerical control systems (CNCs)** can be used provided the **painted surface** is facing **upwards**.

The glass should be thoroughly rinsed after machine processing and washed and dried within 15 minutes after edge processing.

4.4 Drilling and cut-outs

Lacobel T and Matelac T can be drilled with diamond tools or by waterjet. In any case the painted surface is recommended to face the operator (vertical processing) or upwards (horizontal processing).

The glass must be washed and **dried within 15 minutes after edge processing**.

The glass sheets shall never be stacked wet on a stillage, between edge-processing and washing.

5. Washing

This stage involves washing, rinsing and drying the glass.

When using **horizontal washing machines**, the **painted surface** shall be facing **upwards**.

In case a **vertical washing machine** is used, the **painted surface** should be **facing the operator**.

The glass should be washed using **clean, demineralised water** with a pH between 6 and 8 and conductivity < 500 µS/cm. No hard substances (such as limestone, which might stiffen the brushes), acidic agents or detergents should be present in washing and rinsing water.

We recommend using ‘soft’ brushes (with bristles ≤ 0.30 mm in diameter). Ensure the water supply is sufficient and even so that the painted surface is never dry when brushed.

The glass must be washed on its entire surface and dried within 15 minutes after edge processing. The glass should be completely dry when it leaves the machine.
Water droplets must be wiped off with a piece of tissue.

After washing, cork discs with (self-adhesive) foam³ can be placed on the glass side, around the edges of each glazing to prevent contact between the glass and the paint.

Quality control

Two or three halogen projectors should be installed at the washing machine exit to illuminate the painted side of the glass properly, enabling personnel to detect and quickly remedy any mechanical damage to the paint (scratches, flaking or contamination of any kind).

When the glass is placed vertically against the stillage, the glass side should be checked meticulously for paint residues, which may contaminate the rollers in the toughening furnace. such impurities can be removed easily by using a sharp object, e.g. a razor blade, taking care not to scratch the glass side.

6. Thermal toughening and heat strengthening

6.1 Introduction

N.B. Lacobel T and Matelac T colours change during the heat treatment. The true colour of Lacobel T or Matelac T is determined only after the heat treatment.

The thermal parameters (temperatures, convection settings and heating time) shall be strictly the same for thermally toughened as for heat-strengthened Lacobel T / Matelac T.

6.2 General information on furnace type

When a clear glass enters a so-called toughening or tempering furnace, it changes shape at the start of the heating cycle. The change is more pronounced with painted glass because of the difference in absorption rates between the two surfaces, causing one side to heat up more quickly than the other.

In the case of Lacobel T or Matelac T, the upper (painted) surface is heated by radiation. The energy absorbed by the upper layer depends on its colour: black is more absorbent than grey or white. Depending on the colour of the paint, the temperature of the upper and lower surfaces can be balanced out by using convection.

Use the convection adequately to:

- Keep the glass flat during the heating cycle and avoid inconsistent heating of the glass
- Significantly reduce heating time and hence boost the productivity of the plant
- Optimize the quality of the enamel (colour homogeneity and fusing)

Therefore, Lacobel T / Matelac T shall be heat treated in furnaces fitted with at least an upper convection system. Bottom convection is not necessary but can help to keep the glass flat inside the furnace.

The paint on the glass contains organic substances which usually burn off at the temperatures reached in a toughening furnace. The combustion process consumes oxygen and produces a flame (the same occurs with certain enamels used in architectural and automotive glass). In the case of Lacobel T and Matelac T, substances tend to start burning off around 15 seconds after the glass has entered the furnace and can

continue doing so for 100 seconds. The lack of oxygen in the painted surface (due to the flame) may cause a differential oxidation in the enamel, in turn causing an inconsistent final colour on the reverse side (i.e. the painted side) of the product. To prevent this from happening, the upper surface of the product should also be convection heated, during combustion. This will provide extra oxygen, thereby significantly speeding up the combustion process, homogenising the colour of the product and optimizing the enamel quality.

6.3 Recommendations

The following recommendations apply:

- Execute the heat treatment of Lacobel T or Matelac T within 5 days of edge processing, provided the glass is never directly exposed to water.
- **The painted surface must face upwards during heat treatment.**
- Personnel in charge of handling the glass must wear perfectly **clean gloves**.¹ Large sheets of glass must be handled using suction lifting equipment; suction pads must be covered with protective suction pad covers.
- As the acid-etched side of the Matelac T is very dirt sensitive, special attention should be given to furnace rollers cleanliness.
- Just before loading the glass onto the entry conveyor of the furnace, the unpainted side of the glass should be checked meticulously for paint residues, which could contaminate the rollers in the toughening furnace. Any such impurities can be removed easily using a sharp object, e.g. a razor blade, taking care not to scratch the glass side, particularly on the etched side of Matelac T.

6.4 Furnace settings for the heat treatment.

Since all furnaces enable users to regulate the heating and cooling process, the following recommendations should be considered as general guidelines:

The furnace settings should depend on:

- *the product being heat treated:*
 - a. top/bottom absorption ratio;
 - b. glass thickness;
 - c. glass size/furnace size.
- *the furnace type:*
 - a. power density;
 - b. top convection or top and bottom convection
- loading rate
- heating geometry (the relative position of the heating elements/thermocouples/glass).

In practice, panes of 1500 mm * 1500 mm should be heat treated first.

Temperature

Furnace with top convection only: 690 °C top / 710 °C bottom

Furnace with top and bottom convection: 690 °C top / 700 °C bottom

Heating time

The cycle time should be adjusted:

- to prevent breakage during quenching
- to ensure the optical quality and break pattern of the glass
- to optimize the fusing quality of the enamel

Start with 50 seconds per mm of thickness.

The heat absorption of the glass may change depending on the paint colour.

If necessary, decrease the heating time in order to obtain the right optical distortion and the correct fusing of the enamel.

IMPORTANT NOTE:

Once production is launched the furnace temperature will drop due to a lack of heat recovery. This can also lead to a drop in the glass temperature and may affect the quality of the tempered glass.

Some furnaces are more sensitive to this problem than others.

To offset this temperature drop the heating time must be increased in order to maintain the right glass temperature and quality (see the Quality Control section below).

Convection

The convection profile should be adapted to ensure the glass remains flat from the earliest possible stage to the end of the heating process.

For all colours and thicknesses:

- Furnaces with top convection only:
 - Set upper convection pressure to 35% of the maximum pressure for the first 100 seconds of heating time.
- Furnaces with top and bottom convection:
 - Set upper and lower convection pressure to 35% of the maximum pressure for the first 100 seconds of heating time.
 - The lower pressure can be set in order to keep the glass flat inside the oven.

Quench

Quench should be set to ensure the glass is flat on exit (balance of upper/lower air) and that the break pattern meets requirements (recommended pressure).

By default, **use the same quench settings as for the glass substrate without paint.**

Remarks :

The air balance of the quench shall be adjusted in the same way as for clear float.

- If the tempered glass is concave, increase upper pressure.
- If the tempered glass is convex, decrease upper pressure.



Quality control of the enamelled side.

When the Lacobel T or Matelac T is coming out of the quench, it is mandatory to check the quality of the enamel (correct “fusing” of the enamel).

- A first simple test is to touch the enamelled side with a wet finger. A wet stain must not be visible from the glass side.
- Another test can be performed to check the colour. Inadequate heating can lead to colour inconsistencies:
 - Place a sheet of glass on a stillage with the glass side facing you.
 - Superimpose a second sheet of glass on the first one and move it so that you can compare the centre of the first sheet with the edge of the second sheet. No substantial colour difference should be observable.

6.5 Unloading

In general, once heat treated, Lacobel T and Matelac T can be handled and stored like enamelled glass.

- If the glass is unloaded manually, personnel must wear **clean gloves**.¹
- Large and heavy sheets of glass should be handled using suction lifting equipment.
- Given that heat treated glass is never perfectly flat, cork discs with (self-adhesive) foam³ can be placed around the edges of each pane of glass to prevent contact between the glass and painted surfaces. Dry paper with a neutral pH can also be placed between the sheets of glass.

6.6 Heat soak test

The risk of spontaneous breakage due to nickel-sulphide inclusions is inherent to thermally toughened safety glass. The presence of such inclusions can in no way be considered as a fault in the glass. In order to eliminate the risk of spontaneous breakage, an additional heat soak test can be carried out in accordance with standard EN 14179-1 (or equivalent standards for countries outside the EU).

6.7 Standards

After heat treatment, Lacobel T and Matelac T should be subjected to the following checks:

- Heat strengthened glass must comply with EN 1863-1*
- Thermally toughened safety glass must comply with EN 12150-1*
- Where performed, Heat Soak Tests (HST) must comply with EN 14179-1*

NOTE: For the EU, Lacobel T and Matelac T must be CE marked in accordance with EN 1863-2, 12150-2 or EN14179-2. In accordance with EU-regulations, all the requirements set out by these standards (ITT, FPC, etc.) must be met by the processor.

* Or equivalent local standards for countries outside the EU.

6.8 Packaging

If annealed cut-sizes of Lacobel T or Matelac T are to be delivered to another factory in cut sizes, the following packaging recommendations should be implemented:

- A 1mm polyethylene foam spacer should be placed on the glass side, between each sheet. Dry paper with a neutral pH can be used too.
- Ensure that the glass is dry before packaging.
- The glass block shall be packed in a water-tight polyethylene envelope with dessicant bags inside.
- Care must be taken to ensure that the pack is properly attached to the rack so that the sheets do not rub against one another.

If heat treated Lacobel T / Matelac T is to be delivered to another factory in cut sizes, the following packaging recommendations should be implemented :

- A 1mm polyethylene foam spacer should be placed on the glass side, between each sheet⁴; dry paper with a neutral pH can also be placed between the sheets of glass.

- Care must be taken to ensure that the pack is properly attached to the rack so that the sheets do not rub against one another.

7. Bending

In all cases the painted side of the glass must face upwards.

7.1. Heat treated curved glass – oscillating furnaces

Same recommendations as for flat toughening.

7.2. Heat treated curved glass – static furnaces (with bending moulds)

Same settings as for clear float, same thickness.

Top convection is recommended for the above-mentioned reasons.

7.3. Annealed curved glass

Same settings as for clear float, same thickness.

8. Sandblasting

Lacobel T and Matelac T can be sandblasted:

- on the glass side in case of Lacobel T before or after heat treatment;
- on the painted side before heat treatment.

9. Laminating

Lacobel T and Matelac T can be laminated with EVA. With PVB, different grades were tested and only the high adhesion grade BGR20 from Trosifol gave acceptable results in respect to adhesion.

- Lacobel T: on the glass side (no restriction on PVB in that case) and/or enamel side, only after being thermally toughened first;
- Matelac T: on the enamel side, only after being thermally toughened first.

The glass sheets must be thoroughly washed and dried to prevent any trace of drops on the glass, and so that both sides are free of any residue (oil, fingerprints, etc.) and particles (grains of sand, pieces of glass, iron oxides, etc.).

Lacobel T and Matelac T cannot be laminated before thermal toughening.

For more detailed information please contact the AGC TAS team.

Lacobel T and Matelac T can be used in building applications with observation only in reflection. Building applications where observation in transmission can occur are to be excluded. Hence, Lacobel T and Matelac T are not suitable for applications where the glass is back-lit (neither naturally, nor artificially). Please contact your local AGC agent for an alternative product for such applications.

10. Silkscreen printing

Lacobel T and Matelac T sheets can be silkscreen printed, but only after being thermally toughened. Below are several recommendations to comply with during this process:

- Check that the settings of the oven are correct for this type of glass and ink;
- The ink used must be chemically compatible with thermally toughened Lacobel T / Matelac T glass;
- Before screen printing, the thermally toughened sheets must be thoroughly washed and dried so that both sides of the glass are free of any residue (oil, fingerprints, marks of quality labels, etc.) and particles (grains of sand, pieces of glass, iron oxides, etc.);
- When the processor wishes to perform full surface silkscreen printing on the paint side, using an enamel ink, the painted surface of the already toughened glass MUST face upwards during this second heat treatment.

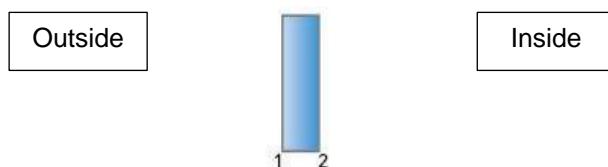
11. Façade applications

Lacobel T and Matelac T can only be used in building applications with observation only in reflection. Building applications where observation in transmission can occur are excluded. Hence, Lacobel T and Matelac T are not suitable for applications where the glass is back-lit (neither naturally, nor artificially). Please contact your local AGC agent for an alternative product for such applications.

11.1 Single glazing

Lacobel T and Matelac T can be used in single-glazing facades, as spandrel application, with insulation behind the spandrel.

The following restrictions count for the position of the painted surface.



	Position of the painted surface	
	1	2
Lacobel T	NO	OK
Matelac T	NO	OK

NOTE: Position 1 is facing the outside of the building; position 2 is facing the inside of the building

11.2 Insulating glazing

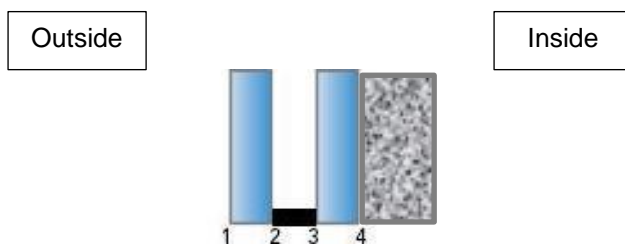
Lacobel T and Matelac T can be assembled in insulating glazing units, but only for spandrel applications. In no case the insulating glazing units shall be visible from inside the building, to avoid observation in transmission

DGU's (double-glazed units) are commonly used for spandrel glazing however TGU's (triple-glazed units) are not allowed for spandrel glazing.

National or local regulations for the use of DGU as spandrels might apply. It is under the sole responsibility of the glass installer to :

- communicate these regulations to AGC when ordering a glass product,
- ask for a technical approval from AGC's Technical Advisory Services [AGC TAS],
- comply with any existing local standards or rules (e.g. in France, IGU is not allowed for spandrels).

Lacobel T and Matelac T can be assembled in insulated glazing units (DGU) with the following restrictions on the position of the painted surface.



	Position of the painted surface in the double-glazed unit			
	1	2	3	4
Lacobel T	NO	OK	NO	OK*
Matelac T	NO	OK	NO	OK**

*Be aware that temperatures inside the DGU can raise, as well as the temperature of the inner pane of the DGU, due to the coloured surface of Lacobel T/Matelac T. The installer needs to take precautions in order to avoid burns for the final user, caused by touching the inner pane. This phenomenon is mostly noticeable when a low-e coating is placed in front of the Lacobel T/Matelac T glass.

**The processor must ensure that the sealing compound has bonded properly to the matt surface.

NOTE:

- Position 1 is facing the outside of the building; position 4 is facing the inside of the building.
- No edge deletion of the Lacobel T/Matelac T paint is needed for purpose of assembly in DGU.
- For the EU, when assembled into IGUs, Lacobel T/Matelac T must be CE marked in accordance with EN 1279-5. In accordance with EU-regulations, all the requirements set out by these standards (ITT, FPC, etc.) must be met by the processor.
- In case a DGU is used for spandrel applications, **both glass panes need to be heat treated**, and a **silicone secondary sealant** should be used..

11.3 Structural glazing, primary and secondary sealing

Where the painted surface is in contact with the DGU sealant, the compatibility of the DGU primary and secondary sealants with the paint(s) shall be approved on a case by case basis.

Structural Glazing (single glazing and DGU spandrels):

Silicone is the only adhesive recommended for Lacobel T and the painted side of Matelac T in structural glazing applications*.

AGC Glass Europe recommends using Dow Corning's DC993 or Sika's Sikasil SG500 as a structural glue. When using Dow Corning's DC993, a primer must be used (Dow Corning primer 1200 OS) after preliminary cleaning of the Lacobel T / Matelac T surface (Dow Corning cleaner R40).

DGU for spandrel application.

Sealant	Recommended Sealant Type & Manufacturer
Primary	Butylver [Fenzi]
Secondary	Silicone DC3362 [Dow Corning]

Attention:

- The compliance of the DGU's to the CE- / CPR- requirements and the chemical compatibility are under the sole responsibility of the DGU processor, including testing and certification.
- The Crisp White colour of Lacobel T and Matelac T is not fully opaque. There is a possibility to see the black sealing, in reflection, through the outer glass pane of the DGU.

**The mat side of Matelac T should never be used for structural glueing.*

11.4 Quality control

Quality control of the final product involves both ensuring compliance with the instructions in this processing guide, compliance with any standards applicable and performing thorough checks at each stage of the manufacturing process.

12. Interior application (Single glass)

Lacobel T or Matelac T, after heat treatment, can be used as decorative glass for interior applications. See our recommendation in the Interior Glass Applications Installation Guide on www.agc-yourglass.com

NOTE:

The Crisp White colour of Lacobel T and Matelac T is not fully opaque, thus it cannot be glued.

13. Storage of cut sizes / insulated glazing

13.1 Processing in the same factory

After each processing stage, cork discs with (self-adhesive) foam³ should be placed around the edges of the glass. The adhesive side should be attached to the glass side. The same also applies to packs containing differently sized sheets of glass. Dry paper with a neutral pH can also be placed between the sheets of glass.

The glass should be stored in line with the recommendations in Section I.2

13.2 Sending cut sizes to another factory

If Lacobel T or Matelac T is to be transported from the processing factory to another factory, the following packaging recommendations should be followed:

- A 1mm polyethylene foam spacer should be placed between each sheet⁴; dry paper with a neutral pH can also be placed between the sheets of glass.
- Care must be taken to ensure that the pack is properly attached to the rack so that the sheets do not rub against each other.

13.3 On site

Where the glass is delivered on site, it must be stored in a dry, sheltered and well-ventilated area. It must never be laid on the ground or be stored either in the sun or near heat sources.

III. CONFORMITY

1. CE Marking

Annealed (so non heat treated) sheets of Lacobel T / Matelac T delivered by AGC do not need to bear the CE marking.

Where customers process Lacobel T / Matelac T (with heat-treatment, assembly into IGUs), they are responsible for CE marking processed products and fulfilling the associated requirements (performing initial type tests (ITTs), marking the glass, factory production control, etc.).

2. Disclaimer

It is the sole responsibility of the processor to adequately inspect the processed glass before and after each stage of production and prior to installation. Failure to apply the professional standards, routine instructions and processing guidelines contained in this processing guide and its linked documents will automatically absolve AGC of any accountability in relation to the glass. We recommend that processors perform preliminary tests with the typical glass compositions for the project prior to any further commitment with their customers. The processor is solely responsible for the quality of the final product.

IV. GLAZING INSTRUCTIONS

AGC's glazing installation instructions for exterior applications are available on www.agc-yourglass.com

AGC's glazing installation instructions for interior applications are available on www.agc-yourglass.com

V. TOUCH-UP PAINT

Small scratches and damages on the painted side of the glass due to handling, processing or installation can be repaired using AGC's FIX-IN TU Touch-up paint for standard colours, available at www.agc-store.com.

VI. CLEANING

Cleaning instructions for glazing installed in facades are available on www.agc-yourglass.com.

VII. NOTES

¹ Recommended gloves

Product description: HYD TUF 52-547 (glove size 8-10 for handling coated glass)

Supplier: IMPEXACOM

Rue des tourterelles 14-16 B -5651 Thy le Château - Belgium

Tel.: + 32 71 612145 Fax: + 32 71 612164

² Recommended cutting oil

Product description: Cutting oil Sogever 1100 FG

Supplier: SOGELUB

Rue de la terre à briques, B-7522 Marquain - Belgium

³ Recommended spacer for storing the glass

Product description: cork discs with foam (self-adhesive) (3x20x20 mm)
Supplier: VITO IRMEN
Mittelstrasse 74-80 - D-53407 Remagen - Germany
Tel.: + 49 26 42 40 07 10 Fax: + 49 26 42 42 913

⁴ **Recommended packing foam**

Product description: 1 mm packing foam
Supplier: SCRIPHORIA
Wellen - Belgium Tel.: + 32 11 370 111

⁵ **Suction-pad covers**

Product description: Suction-pad covers (max. diameter 300 mm)
Supplier: IMPEXACOM
Rue des tourterelles 14-16 - B-5651 Thy le Château - Belgium
Tel.: + 32 71 612145 - Fax: + 32 71 612164

⁶ **Pressure pads**

Product description: grey pressure pads, free of carbon black fillers
Supplier: Neptun, www.neptunglass.com

VIII. DISCLAIMER

This document gives recommendations on how to maximize a qualitative processing of AGC Lacobel T and Matelac T products. AGC provides this information for advisory purposes only. The user/customer is solely responsible for using this advice.

The content of this Processing Guide reflects our knowledge and experience at the time of publication. Every version of the Processing Guide bears a reference to its publication date. The newest version of the Processing Guide replaces all previous versions. Customers should be aware that the newest version may contain technical changes that must be taken into account when using AGC glass products. The latest version or a different language version of the Processing Guide and our Warranty terms may be consulted on www.agc-yourglass.com or obtained from your local AGC representative. Customers should always check whether an updated version of the Processing Guide is available before using AGC glass products.

AGC's warranty on glass products shall only apply if the latest version of this Processing Guide, which may be updated from time to time, is used by the customer and if all relevant requirements, standards and regulations have been taken into account by the customer for the use of the glass products. AGC has made every effort to ensure the accuracy of the information in this Processing Guide, but it cannot be held liable for any oversights, inaccuracies or typographical errors.

Customers and glass processor can always contact AGC's Technical Advisory Services (TAS) for further assistance if required. The glass processor is entirely responsible for the processing and installation of the glass, including the compatibility between the different materials used. AGC Glass Europe accepts liability for the product it supplies and for its general sales conditions.

The document is protected by copyright and intellectual property laws and contains material proprietary to AGC Glass Europe. Its content may not be reproduced without prior written consent of AGC Glass Europe.